

Notice of Allowability

Application No.

09/494,954

Examiner

Marc A. Scharich

Applicant(s)

MCCURDY, ROGER A.

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 12/13/2006.
2. ☒ The allowed claim(s) is/are 1-22.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.

THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
 5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
- Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08),
Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit
of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☐ Interview Summary (PTO-413),
Paper No./Mail Date _____
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with attorney Barry L. Tummino on 4/26/2007. *The application has been amended as follows:*

Amendments to the Claims

Claim 1 is *amended to*:

- 1. A system for helping to protect a vehicle occupant, said system comprising:
 - a crash sensor operative to sense a vehicle crash event and provide a crash signal having a characteristic indicative of the sensed vehicle crash event;
 - an acoustic safing sensor operative to sense acoustic waves propagating through the a structure of a vehicle ~~structure~~ during a the vehicle crash event and provide a safing signal having a characteristic indicative of the sensed vehicle crash event;
 - an actuatable occupant protection device for, when actuated, helping to protect the vehicle occupant during a the vehicle crash event; and

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a controller which controls actuation of said occupant protection device in response to both said crash signal and said safing signal separately indicating the an occurrence of a deployment crash event. --

Claim 2 is *amended to*:

-- 2. A The system as set forth in claim 1 wherein said crash sensor is an accelerometer. --

Claim 3 is *amended to*:

-- 3. A The system as set forth in claim 2 further including a sensor module mountable within a the vehicle, said sensor module including said acoustic safing sensor and said accelerometer. --

Claim 4 is *amended to*:

-- 4. A The system as set forth in claim 2 wherein said acoustic safing sensor is an omni-directional ultrasonic sensor for sensing ultrasonic acoustic waves propagating through the vehicle structure during vehicle crash events originating in any of a plurality of directions and providing said safing signal indicative thereof. --

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Claim 5 is *amended to*:

-- 5. A The system as set forth in claim 4 further including a sensor module mountable within a the vehicle, said ultrasonic sensor being part of said sensor module, said accelerometer being a crush zone sensor remote from said sensor module for sensing acceleration of part of the vehicle indicative of a the vehicle crash event and providing said crash signal having an electrical characteristic indicative thereof. --

Claim 6 is *amended to*:

-- 6. A The system as set forth in claim 5 wherein said crush zone sensor is a front crush zone sensor located at a forward part of the vehicle and electrically connected with said controller, said front crush zone sensor sensing a front impact vehicle crash event in response to movement of the forward part of the vehicle and providing a front crash signal indicative thereof, said controller controlling actuation of said occupant protection device in response to both said safing signal and said front crash signal indicating the occurrence of a the deployment crash event. --

Claim 7 is *amended to*:

-- 7. A The system as set forth in claim 5 wherein said crush zone sensor is a side crush zone sensor located at a side part of the vehicle and electrically connected with said controller, said side crush zone sensor sensing a side impact vehicle crash event in response to movement of the side part of the vehicle and providing a side crash signal indicative thereof, said controller controlling actuation of said occupant protection device in response to both said safing signal and said side crash signal indicating the occurrence of a the deployment crash event. --

Claim 8 is *amended to*:

-- 8. A The system as set forth in claim 1 wherein said crash sensor further includes a plurality of accelerometers, each of said plurality of accelerometers being operative to sense vehicle acceleration and provide a respective acceleration signal, said controller controlling actuation of said occupant protection device in response to an acceleration signal from at least one of said plurality of accelerometers and said safing signal. --

Claim 9 is *amended to*:

-- 9. A The system as set forth in claim 8 further including a sensor module mountable within a the vehicle, said acoustic safing sensor and at least one of said plurality of accelerometers being part of said sensor module. --

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Claim 10 is *amended to*:

-- 10. A system for helping to protect a vehicle occupant, said system comprising:

a plurality of crash event sensors, each of said plurality of crash event sensors being operative to sense a different vehicle condition of ~~the~~ a vehicle and to provide a corresponding sensor signal having a characteristic indicative of the vehicle condition sensed thereby;

an acoustic safing sensor operative to sense acoustic waves propagating through ~~the~~ a vehicle structure during a vehicle crash event and to provide a safing signal having a characteristic indicative of the ~~sensed~~ vehicle crash event;

an occupant protection device for, when actuated, helping to protect the vehicle occupant during ~~a~~ the vehicle crash event; and

a controller connected with each of said plurality of crash event sensors, said acoustic safing sensor, and said occupant protection device, said controller determining ~~the~~ an occurrence of ~~a~~ the vehicle crash event and controlling actuation of said occupant protection device in response to the sensor signal from any one of said plurality of crash event sensors and the safing signal from said acoustic safing sensor separately indicating ~~the~~ an occurrence of a deployment crash event. --

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Claim 11 is *amended to*:

-- 11. A The system as set forth in claim 10 wherein each of said plurality of said crash event sensors is selected from a group consisting of an accelerometer and a crush zone sensor. --

Claim 12 is *amended to*:

-- 12. A The system as set forth in claim 10 further including a sensor module mountable within a the vehicle, said acoustic safing sensor being part of said sensor module. --

Claim 13 is *amended to*:

-- 13. A The system as set forth in claim 12 wherein said at least one of said plurality of crash event sensors is part of said sensor module. --

Claim 14 is *amended to*:

-- 14. A system for helping to protect a vehicle occupant, said system comprising:

a sensor module for mounting in a vehicle, said sensor module

including:

an accelerometer operative to sense vehicle acceleration and provide an acceleration signal having a characteristic indicative of the sensed vehicle acceleration; and

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an acoustic sensor operative to detect acoustic waves propagating through ~~the~~ a vehicle structure during a vehicle crash event and to provide a safing signal having a characteristic indicative of the sensed vehicle crash event; said system further comprising:

an occupant protection device for, when actuated, helping to protect the vehicle occupant during a ~~the~~ vehicle crash event; and

a controller which controls actuation of said occupant protection device in response to both said acceleration signal and said safing signal separately indicating ~~the~~ an occurrence of a deployment crash event. --

Claim 15 (*Line 1*) is amended to:

(*Line 1*) -- 15. A The system as set forth in claim 14 wherein --

Claim 16 is amended to:

-- 16. A The system as set forth in claim 14 further including a side crush zone sensor located at a side part of the vehicle and electrically connected with said controller, said side crush zone sensor sensing a side impact vehicle crash event in response to acceleration of the side part of the vehicle and providing a side crash signal indicative thereof, said controller controlling actuation of said occupant protection device in response to both said safing signal and said side crash signal indicating the occurrence of a ~~the~~ deployment crash event. --

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Claim 17 is *amended to*:

-- 17. A method for controlling actuation of an actuatable occupant protection device of a vehicle, said method comprising the steps of:

sensing a vehicle crash condition;

providing a crash event signal having a characteristic indicative of the sensed vehicle crash condition;

sensing acoustic waves that travel through ~~the~~ a vehicle structure during ~~the~~ an occurrence of the vehicle crash condition;

providing a safing signal in response to the sensed acoustic waves during the vehicle crash condition;

determining ~~the~~ an occurrence of a vehicle crash event in response to both the crash event signal and the safing signal separately indicating the occurrence of ~~a~~ the vehicle crash condition; and

controlling actuation of an occupant protection device in response to said determination. --

Claim 18 is *amended to*:

-- 18. A The method as set forth in claim 17 further including providing a plurality of crash event sensors, each of the crash event sensors sensing ~~a~~ the vehicle crash condition and providing ~~a~~ the crash event signal indicative of the vehicle crash condition sensed thereby, said step of determining ~~a~~ the vehicle crash event further including determining ~~the~~ an occurrence of ~~a~~ the vehicle crash event in response to the crash event signal from at least one of the plurality

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of crash event sensors and the safing signal from the sensed acoustic waves sensor. --

Claim 19 is *amended to*:

-- 19. A The method as set forth in claim 18 wherein each crash event sensor is an accelerometer that provides an acceleration signal indicative of vehicle acceleration. --

Claim 20 is *amended to*:

-- 20. A The method as set forth in claim 17 further including mounting a front crush zone sensor at a forward part of the vehicle, said step of sensing a the vehicle crash condition including sensing a front impact vehicle crash event with the front crush zone sensor, the crash event signal being a front crash signal indicative of the sensed front impact vehicle crash event sensed by the front crush zone sensor, actuation of the occupant protection device being controlled in response to both the safing signal and the front crash signal indicating the an occurrence of a deployment crash event. --

Claim 21 is *amended to*:

-- 21. A The method as set forth in claim 17 further including mounting a side crush zone sensor at a side part of the vehicle, said step of sensing a the vehicle crash condition including sensing a side impact vehicle crash event with the side crush zone sensor, the crash event signal being a side crash signal

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indicative of the sensed side impact vehicle crash event sensed by the side crush zone sensor, actuation of the occupant protection device being controlled in response to both the safing signal and ~~said~~ the side crash signal indicating the an occurrence of a deployment crash event. --

Claim 22 is *amended to*:

-- 22. A system for helping to protect a vehicle occupant, said system comprising:

means for sensing a vehicle crash condition and providing a crash event signal having a characteristic indicative thereof;

means for sensing acoustic waves that travel through the a vehicle structure in response to the an occurrence of the vehicle crash condition and providing a safing signal having a characteristic indicative of a vehicle crash event; and

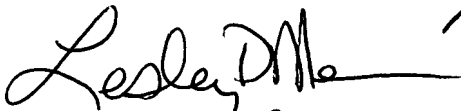
control means for determining the an occurrence of a the vehicle crash event in response to both the crash event signal and the safing signal separately indicating the an occurrence of a deployment crash event and controlling actuation of an occupant protection device in response to the determination. --


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Marc A. Scharich whose telephone number is (571) 272-3244. The examiner can normally be reached on M-F 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lesley Morris can be reached on (571) 272-6651. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

M.A.S. - 4/26/2007


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